Space Weather Forecast

Issued on Wednesday, 05 June 2024 at 00:12 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate solar activity with a slight chance of Strong flares. Glancing Coronal Mass Ejection (CME) impacts possible early in the period with a chance of Minor or Moderate Geomagnetic Storms.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate during the last 24 hours, with two Moderate-class flares. The largest peaking at 04/0631 UTC from the largest and most complex sunspot region in the southwest quadrant. The two regions to its northeast have seen some minor growth. All remaining regions are either stable or continue to show only minor evolution. There are also currently a number of large and significant filaments (arcs of plasma) on the visible disc, these will continue to be monitored for any potential lift-off.

No Earth-directed Coronal Mass Ejections (CMEs) have been observed in available imagery.

Solar Wind / Geomagnetic Activity: Solar winds were indicative of a glancing CME influence (which left the Sun on 31 May), with solar winds reaching mostly Slightly Elevated levels, although briefly reached Elevated levels, with a peak of 516km/s observed at 04/0012 UTC. The magnetic field was Moderate at the start of the period, with the all-important north-south component, also Moderate. This was due to aforementioned glancing CME, which arrived at Earth just before midnight on the 03 June, before a steady waning of the CME effects, with a decline to the current weak values. Geomagnetic activity was mostly Quiet (Kp1-2), with a Unsettled interval at 04/0300-0600 UTC (Kp 3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate activity is forecast with further Moderate-class flares likely and a slight chance of isolated Strong-class flares, these mainly from the complex sunspot in the southwest quadrant of the disc.

Solar Wind / Geomagnetic Activity: An analysis of a CME associated with a long period M7.3 from AR3697 on the 01 June, suggests a potential glancing impact early on day 1 (05 Jun). Otherwise largely slightly elevated to background solar winds are forecast.

Geomagnetic activity is forecast to be mainly Quiet (Kp 1-2) initially. There is the chance of Unsettled or Active conditions increases early day 1 (05 Jun), with a chance of G1-G2/Minor-Moderate (Kp5-6) Storm intervals associated with any CME arrival. Any CME influence is likely to gradually wane by day 2 (06 Jun). Becoming mostly Quiet by days 3 and 4 (07-08 Jun).

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Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is likely to persist at background levels, but with a slight chance of rising above the S1 Minor Storm level in response to any further notable solar flares.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	40	5	1	1
Strong	G3	No	5	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	75	75	75	75
Very Active	R3 to R5 X	No	20	20	20	20

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	20	20	20	20
Very Active	≥ S3 *	No	5	5	5	5

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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